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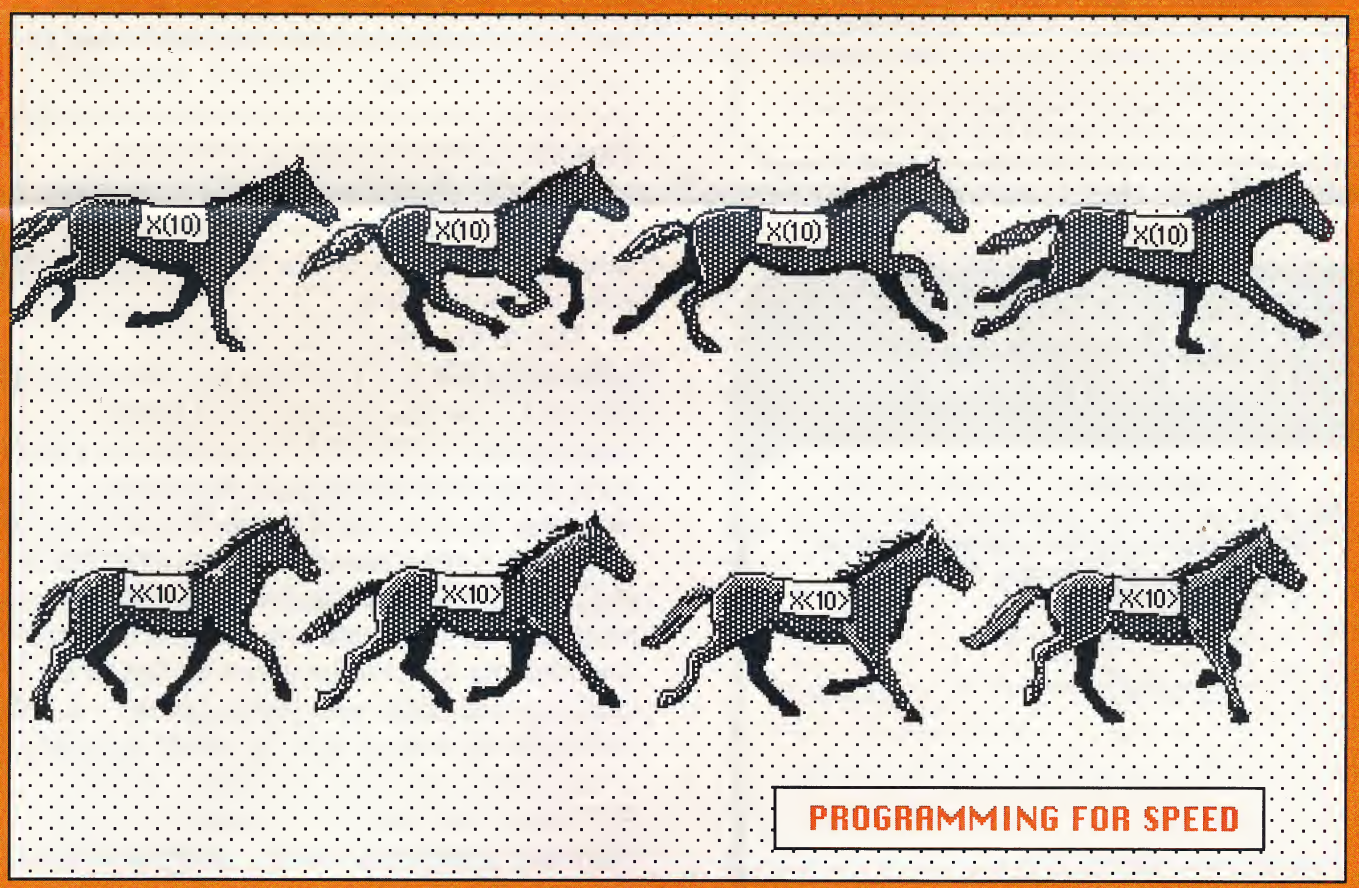
News and Information for Pick™ Operating System Users

Issue Number 21

December 1985



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Coding for speed

A bit of Pick folklore often heard at events like user group meetings is "use MATREADs instead of READs to speed up programs". Why is that, and is it really true?

If a file contains items of ten attributes, a program can use a READ to get one of the items into a dynamic array variable, and then use a statement like X = Y<10> to extract one of the attributes for further processing. Alternatively, the program can use a dimensioned array variable created with a statement like DIM Y(10), use a MATREAD to get one of the items into the dimensioned variable, and then use a statement like X = Y(10) to extract an attribute.

In theory, extracting data from dynamic arrays is relatively slow because the whole item must be scanned and delimiters must be counted to find a given attribute, while the addressing mechanism of dimensioned arrays allow the runtime system to immediately access one array element relatively quickly. To test the theory, we recently ran some simple benchmarks on our Zebra. The results were very interesting.

True to the theory, we found that statements like X = Y(10) are just over twice as fast as X = Y<10> for even small items, implying that a MATREAD can allow very good performance for subsequent extractions. However, we also found that a READ to do the actual input takes about 40% less time than a MATREAD for the same items! A simple program that just reads one item and extracts one attribute tends to be about as fast when implemented either way (ignoring the technique of using a READV, which appears to take about 20% less time than a READ). But since most programs probably do many more extractions than reads, using MATREAD should in the long run save much more execution time compared to using READ. The only real penalty in using MATREAD is that a program must also include DIM statements that are carefully defined to have a maximum dimension equal to the last attribute accessed by the program. Δ

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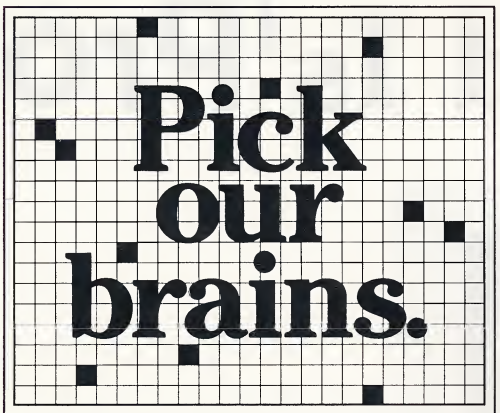

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EASTCOMP II INC.

This month's mailbag

Dear Pragma: I have taken a position as sole Pick programmer for a small software house in Minneapolis. I'm not going to jeopardize my position by mentioning who the major Pick licensee we deal with is, or by telling what manufacturing software package we support, because I have some rather serious complaints about both.

First of all, I do not believe the licensee's operating system is reliable. The documentation is cheap and sometimes inaccurate. The DELETE "verb" is actually a proc that doesn't work like other similar verbs. (You have to supply an asterisk on the command line even though a select-list is being passed.) User exits for HUSH and NOHUSH simply do not work from BASIC.

Furthermore, the latest release sent to our customers by the licensee has been altered in ways that drive me up the wall. For no good reason, the STAT-FILE has been renamed $STAT-FILE*O, but no mention of this was sent to the customers. A side effect is that the automatic reallocation program (also undocumented, you have to hunt for it) doesn't work without modification. And, I have no luck using the BASIC debugger when trying to set breakpoints. It always bombs.

It may have something to do with our being hooked to a host machine via a modem, but sometimes (thrice now), commands I type in at TCL are simply not processed! I am given back a prompt character immediately, and retyping the exact same thing again then works. I suppose that's tolerable when it happens to a programmer, but what if it's a system bug that sometimes happens inside of procs as well?

Another serious annoyance is that this licensee has account-save tapes that are incompatible with other implementations. I'm unable to read my old Ultimate tape containing the product of thousands of hours of work! The licensee's politicians claimed for weeks that they could restore an Ultimate account-save, but when they finally got around to it they discovered otherwise. "Oh. I guess we can't...".

The manufacturing software package stinks. It arrived filled with errors: improper menu linkages, missing cataloged programs, hundreds of missing dictionary items, and occasional program bugs. The latter I can understand, since a bug once in a while is something we all have to live with. But the only way I was able to fix anything was by comparing the software to a demo account, to determine which things were lacking. From a technical point of view, the programs are downright stupid. They have a "fancy" mechanism to allow the end user to move fields around on screens and alter pattern matches, but every one of those fields is coded with a ridiculous alphanumeric string. A

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knowledgeable programmer (not an end user) has to hunt around in the source code in order to figure everything out.

These problems are inexcusable. If this type of trash software is any indication of the kind of packages typically available for the Pick system, then it is no wonder that so few machines are sold each year. That's the real problem, isn't it? Without quality application software, the Pick operating system is useless to business people, and the competition will leave it in the dust.

My one request of you is that you perform an in-depth comparison of the various versions of the operating system, indicating unique features and what they do. For instance, why doesn't anybody ever give Ultimate credit for adding so many things that were lacking: the powerful EXECUTE statement, multiple TCL levels, the $INCLUDE statement, and alphanumeric statement labels? Those features greatly improve the quality of code one can write, and lend themselves to a level of elegance unavailable (as far as I know) on other versions of the operating system. I would much rather see developments like "symbolic reference" (something hailed as a great new feature in Open Architecture) applied to GOSUB calls rather than to the ouput from the WHERE verb.

Dave Ramette
Minneapolis, MN

Dear Dave: *To a degree, we met your request back in May 1983, when we published a complete comparison of the Cosmos, Prime Information, ADDS, and Microdata BASIC implementations in Pragma #4. (As the survey mentioned, only two of those four implementations offered EXECUTE statements at that time.) A complete comparison of all operating system features for all licensees is much more difficult, because of the sheer size and number of implementations and features, and because new releases are frequent, guaranteeing that any comparison would probably become obsolete within three or four months at most. However, some of the vendors are beginning to send us information about the new features they've been implementing, and so you'll probably see those kinds of stories in some of our future issues, although not in the format of point-by-point comparisons between products.*

Your letter mentioned a number of things we'd like to comment on. First of all, the bugs you describe are unfortunate, but also typical for almost all operating system vendors. The real measure of a licensee is whether or not software bugs are tracked and documented for customers, then periodically eliminated with upgrades and new releases. As long as a vendor provides an accessible and up-to-date bug list, then software houses like yours should have no problem working around the bugs. If the licensee won't

provide that information, you should take your business elsewhere.

There is also a simple solution to prevent incidents like the STAT-FILE fiasco: your customers should be getting new releases through you, not direct from the licensee. Otherwise, the customers aren't really "yours". If you let the licensee do your work for you, they'll make mistakes for you, too.

Your concern about commands possibly not working from within procs is based on a supposition. The modem sounds suspicious, so we'll leave the operating system innocent until proven guilty.

We don't have a lot of sympathy for the account-save problem, since there are other simple ways of writing tapes to move data between machines. If we had a nickel for every time a customer relied on the word of a computer salesperson, and then got burned, we'd be zillionaires. Never believe the claimed performance and capabilities of a computer system until you've proven it for yourself. And an easy way to prove it is to get testimonials from satisfied customers who have already accomplished what you're trying to do. If the vendor can't refer you to such a customer, then you should assume you'll run into problems.

Finally, we're not too concerned that "trash software" will hold back the sales of Pick. Indeed, there's no evidence that Pick applications are any worse than the products sold for other environments. Vendors that try to market and support poorly written software usually collapse fairly quickly.

We do appreciate your letter, and want to persuade you not to become too discouraged with your present situation. Pick products haven't yet conquered the world, but they haven't been left "in the dust" either. Δ

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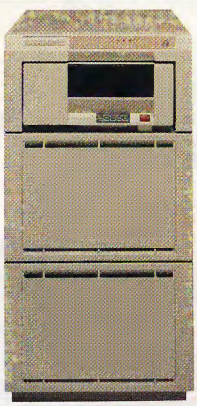

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